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Patent
Case No.: 55871US002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: ALLEN, RICHARD C. Group Art Unit: 2872
 Application No.: 09/966557 Examiner: C. Curtis
 Filed: September 27, 2001
 Title: POLARIZATION ROTATORS, ARTICLES CONTAINING THE POLARIZATION ROTATORS, AND METHODS OF MAKING AND USING THE SAME

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Commissioner for Patents
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Dear Sir:

This is in response to the outstanding Office Action, mailed April 21, 2004, in the above-identified application. The Applicants hereby request a one-month extension of time to respond to the April 21, 2004 Office Action. Please charge the one-month extension fee to Deposit Account No. 13-3723.

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Amendments to the Claims:

The following Listing of Claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (currently amended) A film, comprising:
 a polarizer element having a polarization axis, wherein the polarizer element preferentially transmits light having a polarization that is parallel to the polarization axis; and
 a separate polarization rotator element disposed in the film and configured and arranged to rotate the polarization of at least a portion of the light that is transmitted by the polarizer element by an angle of at least 5 degrees;
wherein the polarizer element and the separate polarization rotator element are integrated to form a single film.
2. (original) The film of claim 1, wherein the polarizer element is a first polarizer element and the film further comprises a second polarizer element having a polarization axis that differs from the polarization axis of the first polarizer element by at least 5 degrees and wherein the polarization rotator element is disposed between the first and second polarizer elements.
3. (original) The film of claim 2, wherein the polarization rotator element is configured and arranged to rotate the polarization of at least a portion of the light transmitted by the first polarizer element to within five degrees of the polarization axis of the second polarizer element.
4. (original) The film of claim 2, wherein the polarization rotator element is configured and arranged to rotate the polarization of at least a portion of the light transmitted by the first polarizer element to the polarization axis of the second polarizer element.
5. (original) The film of claim 2, wherein the first polarizer element comprises a reflective polarizer and the second polarizer element comprises an absorbing polarizer.

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6. (original) The film of claim 1, further comprising an alignment layer disposed between the polarizer element and the polarization rotator element.

7. (original) The film of claim 6, wherein the alignment layer comprises a polymeric material that has been photoaligned.

8. (original) The film of claim 1, wherein the polarizer element comprises a surface that facilitates alignment of the polarization rotator element.

9. (original) The film of claim 1, wherein the polarization rotator element comprises a liquid crystal material.

10. (previously amended) The film of claim 9, wherein the polarization rotator element further comprises a light absorbing material different from the liquid crystal material.

11. (original) The film of claim 10, wherein the light absorbing material is aligned within the polarization rotator element to substantially absorb light having a first polarization and to substantially transmit light having a second polarization orthogonal to the first polarization.

12. (previously amended) The film of claim 9, wherein the polarization rotator element further comprises a light diffusing material different from the liquid crystal material.

13. (original) The film of claim 1, wherein the polarizer element comprises a reflective polarizer.

14. (original) The film of claim 1, wherein the polarizer element comprises an absorbing polarizer.

15. (original) The film of claim 1, wherein the polarizer element comprises a reflective polarizer and an absorbing polarizer.

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16. (original) The film of claim 1, wherein the polarization rotator element rotates the polarization of the portion of the light that is transmitted by the polarizer element by an angle in the range of 40 to 50 degrees.

17. (original) The film of claim 1, wherein the polarization rotator element rotates the polarization of the portion of the light that is transmitted by the polarizer element by an angle in the range of 85 to 95 degrees.

18. (currently amended) A film, comprising:

a polarizer element, wherein the polarizer element preferentially transmits a substantial portion of light having a first circular polarization; and

a polarization rotator element disposed in the film and configured and arranged to rotate the polarization of at least a portion of the light that is transmitted by the polarizer element to convert the polarization of the light from the first circular polarization to a first linear polarization;

wherein the polarizer element and the polarization rotator element are integrated to form a single film.

19. (original) The film of claim 18, wherein the polarizer element comprises chiral nematic liquid crystal material.

20. (original) The film of claim 18, wherein the polarization rotator element is a first polarization rotator element and the film further comprises a second polarization rotator element, wherein the second polarization element is configured and arranged to rotate the polarization of at least a portion of light transmitted by the first polarization rotator element by at least five degrees.

21. (currently amended) A display, comprising:

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(a) a liquid crystal cell that is configured and arranged to operate using polarized light;

(b) a light source; and

(c) a film disposed between the liquid crystal display cell and the light source, the film comprising

(i) a polarizer element having a polarization axis, wherein the polarizer element preferentially transmits light having a polarization that is parallel to the polarization axis; and

(ii) a separate polarization rotator element disposed in the film and configured and arranged to rotate the polarization of at least a portion of the light that is transmitted by the polarizer element by an angle of at least 5 degrees;

wherein the polarizer element and the separate polarization rotator element are integrated to form a single film.

22. (original) The display of claim 21, further comprising a polarizer disposed between the film and the liquid crystal cell, wherein the polarizer has a polarization axis that differs by at least five degrees from the polarization axis of the polarizer element of the film.

23. (original) The display of claim 22, wherein the polarization rotator element is configured and arranged to rotate the polarization of at least a portion of the light transmitted by the polarizer element of the film to within five degrees of the polarization axis of the polarizer.

24. (previously amended) The ~~film~~ display of claim 22, wherein the polarization rotator element is configured and arranged to rotate the polarization of at least a portion of the light transmitted by the polarizer element of the film to the polarization axis of the polarizer.

25. (currently amended) A method of polarizing light, the method comprising:
directing light at a polarizer element of a film, the polarizer element preferentially transmitting light having a first polarization; and

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rotating, by at least five degrees, the polarization of at least a portion of the light transmitted by the polarizer element using a separate polarization rotator element of the film, wherein the polarizer element and the separate polarization element are integrated to form a single film.

26. (original) The method of claim 25, further comprising directing at least a portion of the light from the polarization rotator element to a second polarizer element of the film, wherein the second polarizer element has a polarization axis in a different direction than the polarizer element.